

AD-A145 659

A HIGH-VOLTAGE DISCHARGER(U) FOREIGN TECHNOLOGY DIV
WRIGHT-PATTERSON AFB OH V N BONDALETOV ET AL.
17 AUG 84 FTD-ID(RS)T-0341-84

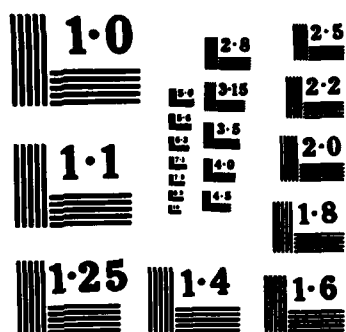
1/1

UNCLASSIFIED

F/G 9/5

NL





2

AD-A145 659

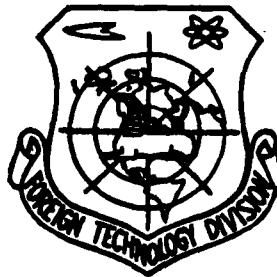
FOREIGN TECHNOLOGY DIVISION



A HIGH-VOLTAGE DISCHARGER

by

V. N. Bondaletov, R. I. Golitsyn



DTIC
ELECTE
SEP 19 1984
S E D

Approved for public release;
distribution unlimited.

DTIC FILE COPY

84 09 18 232

EDITED TRANSLATION

FTD-ID(RS)T-034 1-84

17 Aug 1984

MICROFICHE NR: FTD-84-C-000826

A HIGH-VOLTAGE DISCHARGER

By: V. N. Bondaletov, R. I. Golitsyn

English pages: 4

Source: USSR Patent Nr. 347849, 22 September 1972, pp. 1-3

Country of origin: USSR

Translated by: Joseph E. Pearson

Requester: FTD/TQTD

Approved for public release; distribution unlimited.

| | |
|--------------------|-------------------------------------|
| Accession For | |
| NTIS GRA&I | <input checked="" type="checkbox"/> |
| DTIC TAB | <input type="checkbox"/> |
| Unannounced | <input type="checkbox"/> |
| Justification | |
| By _____ | |
| Distribution/ | |
| Availability Codes | |
| Dist | Avail and/or Special |
| A-1 | |

THIS TRANSLATION IS A RENDITION OF THE ORIGINAL FOREIGN TEXT WITHOUT ANY ANALYTICAL OR EDITORIAL COMMENT. STATEMENTS OR THEORIES ADVOCATED OR IMPLIED ARE THOSE OF THE SOURCE AND DO NOT NECESSARILY REFLECT THE POSITION OR OPINION OF THE FOREIGN TECHNOLOGY DIVISION.

PREPARED BY:

TRANSLATION DIVISION
FOREIGN TECHNOLOGY DIVISION
WP-AFB, OHIO.



FTD-ID(RS)T-034 1-84

Date 17 Aug 19 84

U. S. BOARD ON GEOGRAPHIC NAMES TRANSLITERATION SYSTEM

| Block | Italic | Transliteration | Block | Italic | Transliteration |
|-------|------------|-----------------|-------|------------|-----------------|
| А а | <i>А а</i> | A, a | Р р | <i>Р р</i> | R, r |
| Б б | <i>Б б</i> | B, b | С с | <i>С с</i> | S, s |
| В в | <i>В в</i> | V, v | Т т | <i>Т т</i> | T, t |
| Г г | <i>Г г</i> | G, g | У у | <i>У у</i> | U, u |
| Д д | <i>Д д</i> | D, d | Ф ф | <i>Ф ф</i> | F, f |
| Е е | <i>Е е</i> | Ye, ye; E, e* | Х х | <i>Х х</i> | Kh, kh |
| Ж ж | <i>Ж ж</i> | Zh, zh | Ц ц | <i>Ц ц</i> | Ts, ts |
| З з | <i>З з</i> | Z, z | Ч ч | <i>Ч ч</i> | Ch, ch |
| И и | <i>И и</i> | I, i | Ш ш | <i>Ш ш</i> | Sh, sh |
| Й й | <i>Й й</i> | Y, y | Щ щ | <i>Щ щ</i> | Shch, shch |
| К к | <i>К к</i> | K, k | Ъ ъ | <i>Ъ ъ</i> | " |
| Л л | <i>Л л</i> | L, l | Ы ы | <i>Ы ы</i> | Y, y |
| М м | <i>М м</i> | M, m | Ь ь | <i>Ь ь</i> | ' |
| Н н | <i>Н н</i> | N, n | Э э | <i>Э э</i> | E, e |
| О о | <i>О о</i> | O, o | Ю ю | <i>Ю ю</i> | Yu, yu |
| П п | <i>П п</i> | P, p | Я я | <i>Я я</i> | Ya, ya |

*ye initially, after vowels, and after Ъ, ь; e elsewhere.
When written as ё in Russian, transliterate as yě or ě.

RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

| Russian | English | Russian | English | Russian | English |
|---------|---------|---------|---------|----------|--------------------|
| sin | sin | sh | sinh | arc sh | sinh ⁻¹ |
| cos | cos | ch | cosh | arc ch | cosh ⁻¹ |
| tg | tan | th | tanh | arc th | tanh ⁻¹ |
| ctg | cot | cth | coth | arc cth | coth ⁻¹ |
| sec | sec | sch | sech | arc sch | sech ⁻¹ |
| cosec | csc | csch | csch | arc csch | csch ⁻¹ |

Russian English

| | |
|-----|------|
| rot | curl |
| lg | log |

GRAPHICS DISCLAIMER

All figures, graphics, tables, equations, etc. merged into this translation were extracted from the best quality copy available.

A High-Voltage Discharger

V. N. Bondaletov, R. I. Golitsyn

This invention belongs to the region of high-voltage technology and can be employed as a commutating element for the discharging of powerful low-induction capacitor banks.

At the present time for the commutating of capacitative energy storage elements discharger structures, containing two main electrodes and a trigger electrode, are employed.

A deficiency of such dischargers is the considerable magnitude of their active and inductive reactances. Thus the employment of such dischargers for the commutation of low-induction capacitor banks leads in certain cases to an impermissibly large increase in the inductive and active reactances of the discharge circuit.

The purpose of the invention is to decrease the inductive and active reactances of the discharge circuit and to increase reliability.

This is attained by the fact, that the main electrodes of the discharger are executed in the form of plane-parallel (parallel-plate) buses, and the surface of the trigger electrode has a serrated form, which leads to a sharp distortion in the field between the main electrodes during the supply to the trigger electrode of the initiating voltage and to the

development of parallel discharges from the teeth.

Fig. 1 shows the described discharger, a general view; Fig. 2 shows the shape of the teeth of the trigger electrode; Fig. 3 shows the circuit diagram of the discharger connection.

The discharger (see Fig. 1) consists of two main electrodes 1 and 2, the trigger electrode 3, the insulating liners 4, and the common bus 5.

Included in the circuit diagram of the discharger connection (see Fig. 3) are: the voltage divider based on resistors 6 and 7, the device for the supplying of the initiating voltage to the trigger electrode 8, the load 9, and the capacitative energy storage element 10.

The capacitative energy storage element 10 is charged with negative voltage - V_1 .

The potential of the trigger electrode (with the aid of the voltage divider) and its arrangement relative to the main electrodes are selected in such a manner, that the field is close to homogeneous. During the supply to the trigger electrode of positive initiating voltage U_2 with an amplitude not lower than the working voltage - U_1 a 15-20-fold excess voltage voltage is created. This is explained by the fact, that the field from the homogeneous one with breakdown voltage is broken down into two sections with sharply heterogeneous fields. Moreover, the total voltage is doubled, and the gap is broken down into two shorter ones.

The change in the field from practically homogeneous to sharply heterogeneous with a simultaneous decrease in the length of the gaps and an increase in the applied voltage ensures the appearance of parallel discharges.

Thus, the path of the current during the commutation of the charged capacitor is accomplished along four channels (in this case the trigger electrode has four teeth). The inductive and active reactances of each channel are connected parallel to each other, and the total inductive and active reactances of the discharger and, consequently, of the entire

discharge circuit is significantly decreased.

In this case the voltage to the trigger electrode is supplied to one point from one source of the initiating pulse, for example, a cable section.

Patent Claim

The high-voltage discharger, containing two main electrodes and a trigger electrode, is distinguished by the fact, that for the purpose of decreasing the inductive and the active reactances and increasing the reliability, the trigger electrode is made in serrated form.

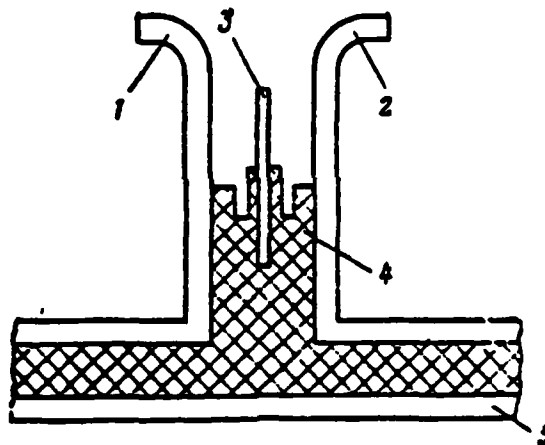


Fig. 1

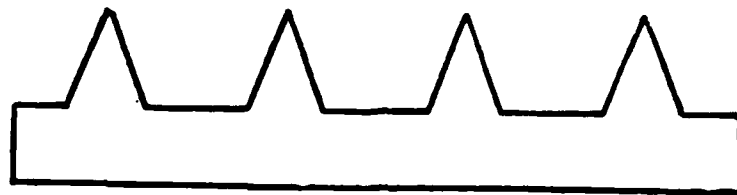


Fig. 2

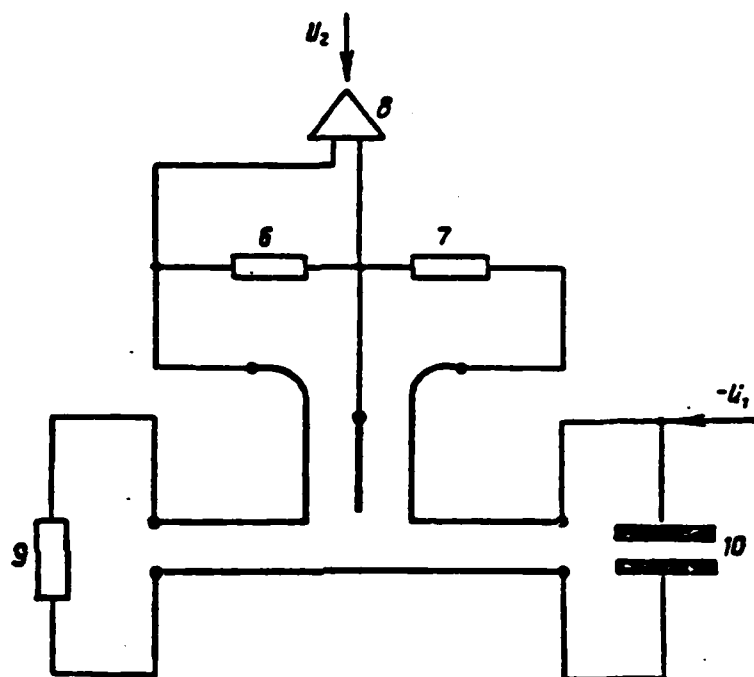


Fig. 3

END

FILMED

10-84

DTIC